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In the Supreme Court of the United States

OCTOBER TERM, 1932

No. ——

THE UNITED STATES OF AMERICA, PETITIONER

v.

DUBILIER CONDENSER CORPORATION

No. ——

THE UNITED STATES OF AMERICA, PETITIONER

v.

DUBILIER CONDENSER CORPORATION

No. ——

THE UNITED STATES OF AMERICA, PETITIONER

v.

DUBILIER CONDENSER CORPORATION

PETITION FOR WRITS OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE THIRD CIRCUIT

The Solicitor General, on behalf of the United States of America, prays that writs of certiorari issue to review the judgments of the Circuit Court of Appeals for the Third Circuit, entered in the above-entitled causes on May 24, 1932 (R. 468), affirming judgments of the District Court for the District of Delaware (R. 231–233) dismissing the

bills of complaint (R. 4–14) which had been brought to secure an assignment to the United States of three patents.

OPINIONS BELOW

The opinion of the District Court (R. 219–230) is reported in 49 F. (2d) 306. The opinion of the Circuit Court of Appeals (R. 462) is not yet reported.

JURISDICTION

The judgments of the Circuit Court of Appeals were entered on May 24, 1932. (R. 468.) The jurisdiction of this Court is invoked under Section 240 (a) of the Judicial Code, as amended by the Act of February 13, 1925.

QUESTION PRESENTED

Whether or not the United States has equitable title to inventions for the improvement of the radio art made by technical research employees of the Bureau of Standards while engaged, principally during regular hours of employment, in research relating to the advancement of the radio art, which was within the scope of their general employment, although they were not specially assigned or directed to devise the particular inventions.

STATEMENT

These are three actions in equity to secure an assignment to the United States of the title to three patents which were issued on inventions made by Percival D. Lowell and Francis W. Dunmore in the course of their employment as research workers in the Bureau of Standards. The three bills

of complaint are in substance alike except in their references to the different patents (R. 4–14), and the cases were consolidated for purposes of trial and tried together (R. 217).

The facts as found by the trial court are as follows:

The Bureau of Standards is a subdivision of the Department of Commerce, and is maintained largely for scientific and engineering research. There has been delegated to it from time to time by Acts of Congress the duty of conducting scientific research and tests in the development of a great many industrial arts. Its various research projects are carried on at times for other departments of the Government, and at times for private industries, with or without cost to the Bureau. One of the duties of the Bureau is that of "investigation and standardization of methods and instruments employed in radio communication."[1] To this end, it established a radio section. (R. 220–221.)

In the years 1921 and 1922 Percival D. Lowell and Francis W. Dunmore were employed as laboratory assistants and associate physicists in the radio section, and were engaged in carrying on investigation, research, and experimentation in problems relating to radio. (R. 221, 222.) Half of their time was occupied in research work and the other half in testing work. (R. 229.)

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[1] See the Act of March 4, 1915, c. 141, 38 Stat. 997, 1044.

In the summer of 1921 Lowell and Dunmore were assigned to the task of designing a suitable radio relay for remote control, operated by direct current for use on aircraft. (R. 222.) After designing such a relay in the fall of 1921, they proceeded, without any direction on the part of their superiors, to adapt it to operation by alternating current. Their next step was to adapt the use of alternating current to radio receiving apparatus. This work required the development of a means for eliminating hum caused by the alternating current. (R. 223.) Finally, they designed a loud-speaker operated by alternating current. The devices in question were worked out at the Bureau with government-owned materials and with the help of government mechanics and draftsmen, principally during the regular hours of employment. (R. 223.) After this work had been in progress it came to the knowledge of their superior officers, who permitted and even encouraged them to continue. (R. 224.) The inventions in question were devised by Lowell and Dunmore without instruction or assignment from any superior official in the Bureau. (R. 223–224.)

Although the trial court did not so find, it is clear from the record and from official documents or circulars, of which the Court will take judicial notice, that a large amount of the work of the Bureau is of an *inventive* character, and that as a result of the investigative and research work of the Bureau a large number of *inventions* have

been perfected, in some cases being patented, by employees of the Bureau. (R. 26, 30–31, 135, 212–217.) Extracts from a recent annual report of the Director of the Bureau,[2] which are typical of a large number of like statements which might be reproduced, illustrate clearly the function of the Bureau as a great scientific organization engaged in the advancement of many sciences and industrial arts. Inventions of an almost unlimited character have necessarily and designedly resulted, and will continue to result from its activities.

In the early part of 1922 three applications for patents were filed by Lowell and Dunmore covering the above-mentioned developments, resulting in the three patents in suit.[3] (R. 223–224.) Shortly after the filing of the applications officials of the Bureau of Standards made a demand upon Lowell and Dunmore for an assignment of their rights to the United States, and this demand was later reiterated by the Department of Justice. These demands were refused. (R. 224.) Thereafter Lowell and Dunmore assigned their patent rights to the Dubilier Condenser Corporation, the respondent herein, by means of a series of exclusive licenses, subject to a nonexclusive license in the United

[2] See appendix B, pp. 19–25, *infra*.

[3] The letters patent involved are No. 1455141, relating to radio receiving apparatus operated by alternating current; No. 1606212, relating to radio loud-speakers operated by alternating current; and No. 1635117, relating to radio relays operated by alternating current. For a discussion thereof see *Dubilier Condenser Corporation* v. *Radio Corporation of America*, 34 F. (2d) 450 (D. Del.).

States to use the inventions without royalty. (R. 224–225.)

The United States thereafter brought these suits to compel the respondent to assign to it all the respondent's rights and interests in the patents, on the ground that the inventions were made by Lowell and Dunmore as part of the duties of their employment and that title to the inventions and patents covering them was in the United States as the employer.

The District Court dismissed the three bills of complaint on the grounds, first, that there was no specific assignment or direction on the part of Lowell's and Dunmore's superior officers to make the inventions involved;[4] second, that not to permit Government employees under the circumstances involved to retain the property rights to their inventions would take away from them an incentive to make inventions and would crush inventive genius. (R. 228–230.)

Upon appeal the Circuit Court of Appeals affirmed the trial court's finding that there was no specific assignment directing Lowell and Dunmore

[4] The bills of complaint alleged that Lowell and Dunmore were specifically assigned to develop the inventions in question, and evidence was introduced in an effort to sustain these allegations. But it was contended in the alternative that the inventions were the property of the Government even if the employees were not specifically assigned to the task of developing them since in making the inventions they were merely employing their inventive talent in the advancement of the radio art, which is what they were hired to do. (R. 228.)

to make the inventions in question and held that in the absence of such assignment the Government did not acquire title to patents covering the employees' inventions. Accordingly it affirmed the judgments of the trial court. (R. 468.)

SPECIFICATION OF ERRORS TO BE URGED

The Circuit Court of Appeals erred:

(1) In holding that an employer does not acquire title to the patent covering an employee's invention in the absence of a specific assignment or direction to make the invention, although one of the duties of the employment was to carry on research and inventive work in a specified field, the invention was made within such field, the work was carried on at the employer's place of business during the regular hours of employment, and materials and equipment owned by the employer were used and consumed in making the invention.

(2) In affirming the decrees of the District Court.

REASONS FOR GRANTING THE WRITS

I. This case presents a question of law of first impression in this Court.

Inventions made by employees may be divided into the following categories:

(1) Inventions having no bearing upon the employee's duties, and made outside of office hours. In such instances the invention is the property of the employee, and the employer has no interest in it.

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(2) Inventions arising out of or made in connection with the employee's duties and incidental thereto, by an employee whose duties do not include the conduct of research or inventive work. Here the employee retains title to the patent, but the employer is entitled to a shop right or a nonexclusive license. See *Gill* v. *United States,* 160 U. S. 426.

(3) Inventions made by an employee in connection with and within the field of his work, where his duties include the conduct of research and inventive work. This category may be further subdivided:

(*a*) Where the employee was specifically assigned to the task of making the invention. In such cases the entire property rights to the invention vest in the employer. *Solomons* v. *United States,* 137 U. S. 342; *Standard Parts Co.* v. *Peck,* 264 U. S. 52; *Houghton* v. *United States,* 23 F. (2d) 386 (C. C. A. 4th), certiorari denied, 277 U. S. 592; *Hoyt* v. *Corporon,* 268 Mass. 544.

(*b*) Where the invention is within the general field of the employee's research and inventive work, but where he was not specifically assigned to develop the particular invention. The cases at bar fall within this category. This Court has never passed upon the question as to the rule which should apply to such a situation.

II. The decisions of the courts below are in conflict with the expressions of the court in *Moffett* v. *Fiske,* 51 F. (2d) 868 (App. D. C.), cer-

tiorari denied, 284 U. S. 662, where suit was brought by one Naval officer against another for infringement of a patent on a torpedo plane. The invention was made by the plaintiff while head of the Committee on War Plans of the General Board of the Navy, his time being largely devoted to devising plans for recapturing the Philippine Islands in the event they were captured by an enemy. The court expressed the view that the invention was the property of the Government. The decisions of the courts below are also in conflict with *St. Louis & O'Fallon Coal Co.* v. *Dinwiddie,* 53 F. (2d) 655 (D. Md.).

III. The decisions of the courts below are erroneous.

This Court has held that where the making of an invention is comprised within the duties of the employment, the title to the patent on such invention automatically vests in the inventor's employer. *Solomons* v. *United States,* 137 U. S. 342; *Gill* v. *United States,* 160 U. S. 426; *Standard Parts Co.* v. *Peck,* 264 U. S. 52. This rule was followed and applied in *Houghton* v. *United States,* 23 F. (2d) 386 (C. C. A. 4th), certiorari denied, 277 U. S. 592; *Magnetic Mfg. Co.* v. *Dings Magnetic Separator Co.,* 16 F. (2d) 739 (C. C. A. 7th), and in *St. Louis & O'Fallon Coal Co.* v. *Dinwiddie,* 53 F. (2d) 655 (D. Md.). Expressions upholding this view are also found in the opinion of the court in *Moffett* v. *Fiske,* 51 F. (2d) 868 (App. D. C.), certiorari denied, 284 U. S. 662. The same principle has been

applied in *Hoyt* v. *Corporon,* 268 Mass. 544; *Air Reduction Co.* v. *Walker,* 118 Misc. 827, and *British Reinforced Concrete Engineering Co.* v. *Lind,* 33 T. L. R. 170.

The Circuit Court of Appeals seeks to distinguish the decisions of this Court above cited and the *Houghton* case on the ground that in each of them the employee was specifically or expressly directed to make the invention involved, whereas such a direction is absent in the cases at bar. But it is respectfully submitted that the real ground upon which those decisions are based is that in making the invention the employee was doing what he was hired to do and therefore the fruits of his work became the property of the employer. If he was hired to make inventions, specific directions to do so need not be shown.

In the cases at bar both courts found that carrying on *research* work in the radio field was one of the duties of the inventors' employment. (R. 221, 229, 462.) The courts below did not find, but it is established by the record and by matters which the Court will judicially notice, that much of the research work of the Bureau of Standards is of an inventive character, and that as a result of such research work inventions are frequently and regularly made, and sometimes patented, by employees of the Bureau. (R. 26, 30–31, 34–35, 135, 212–217.) The United States contends that the duty to do research work in the field of radio in the Bureau of

Standards necessarily implies a general duty to exercise inventive capacity in the improvement of the radio art.[5] It follows that when Lowell and Dunmore were engaged in research and made the inventions in question they were doing exactly what they were hired to do, namely, employing their inventive talent for the improvement of the radio art. Wherever invention results directly from the performance of one of the duties of the employment and the implication from all the circumstances of the hiring is that the employee was hired to exercise inventive ability in the improvement of the art, the invention should be held the property of the employer. If such implication is clear specific direction to make the particular invention is not necessary to show that the inventor was employed to make the invention. If research for the advancement of a particular art is the duty of the employee and therefore the purpose of the employment, as is the case here, the principle enunciated and applied by this Court in the *Solomons* and *Standard Parts* cases, *supra,* is applicable.

The United States contends that the court below adopted an arbitrary test which ignores the basis of the rule which imposes upon the employee an implied obligation to turn over to his employer

[5] See Appendix B, pp. 19–25, *infra.* One needs only to peruse an annual report of the Director of the Bureau to realize the tremendous amount of work of an *inventive* character which is carried on by that organization not only in the development of the radio art but also in the development of many other industrial arts.

improvements in the art he is hired to develop. The test should always be whether the employee was hired to carry on research, the object of which both parties must have understood was advancement in the arts involving invention, and not the arbitrary test of special orders with relation to particular tasks.

Were the decision of the Circuit Court of Appeals to stand, incongruous and unjust results would frequently be found. A person in a subordinate position whose activities are strictly limited to expressly designated tasks would be required to convey to his employer any invention that he makes. On the other hand, an employee higher up in the scale, in a more responsible and remunerative position, who is allowed to work to a certain extent on his own initiative, would be permitted to retain the fruits of his inventive genius.

Both courts below argue that the words "research" and "invention" are not synonymous and that "research work" is not necessarily "inventive work." They overlook the fact that invention is frequently the result of research and was an objective of the research employment in this case which was carried on in order to assist the development of the art by new and useful improvements, and if, as both courts found to be the fact, the conduct of radio research was one of the duties of Dunmore and Lowell, and such research led to the inventions,

the making of those inventions was comprised within the duties of the employees—quite as much so as if they had been specially assigned to do what they did do in the general course of their employment.

IV. The question involved is of general interest and of great importance in governmental administration. Research work regularly resulting in numerous inventions is continuously being carried on in laboratories conducted by a large number of governmental agencies.[6] Among such agencies are the Bureau of Standards, the Bureau of Mines, the Bureau of Fisheries, several bureaus of the Department of Agriculture, various branches of the War and Navy Departments, several bureaus of the Treasury Department, and the National Advisory Committee on Aeronautics.[7] Many of these inventions are of great value to the Government, to private industries, and to the general public. They are frequently made without any specific assignment or direction since, in the efficient conduct of laboratory investigations, it is necessary to permit

[6] In Appendix B of the Government's Brief in Opposition in *Fiske* v. *Moffett*, No. 396, October Term, 1931, are copies of letters from the Secretary of War and the Secretary of the Navy which indicate that during the years 1921–1930 more than 3,000 applications for patents were filed by employees of these two departments alone. See also Appendix C, relating to inventions perfected in the Bureau of Standards and the Department of Agriculture.

[7] For a partial list of governmental research agencies, see appendix A, pp. 16–18, *infra*.

scientists to exercise initiative and freedom in the solution of particular problems and also in following the suggestions and implications of scientific discovery so that useful improvements for the advancement of the arts may be devised.[8] To conduct scientific research by rigid assignments to particular tasks is unwise and often impossible. The field to be searched is the art itself. No one, not even the inventor himself, can anticipate discovery and invention.

It is no answer to the practical problems involved to say that the matter of the ownership of inventions should be taken care of by agreement between the parties prior to the contract of hiring. Assuming that the Government possesses the power under the civil service and personnel classification laws to exact from research employees in all Government departments express written contracts binding them to assign their inventions to the Government, the fact remains that such contracts have not been required in the past, and many inventions have been made and are being made which are unaffected by such agreements.

On the other hand, to permit Government employees to retain title to inventions made by them in connection with their work would often be unfair to the taxpayers, at whose cost the inventions

[8] The freedom and lack of restrictions with which Dunmore and Lowell carried on their work (R. 150, 164, 196, 222–223) shows clearly that this was the character of their employment.

are made. Moreover, we are advised that this would impair the morale of the laboratories, especially in the case of the Bureau of Standards, which is a great scientific agency carrying on research not only for the Government but for the public at large which is interested in the advancement of the arts. It is against the public interest that private individuals should collect royalties for the use of inventions developed at public cost. Public confidence in the Bureau would be affected, and lack of efficiency and partial disorganization would eventuate from the temptation on the part of the employees to devote themselves to tasks which tended to promise pecuniary benefits to themselves.

Wherefore, it is respectfully submitted that the petition should be granted.

THOMAS D. THACHER,
Solicitor General.

AUGUST, 1932.

APPENDIX A

PARTIAL LIST OF GOVERNMENTAL AGENCIES CONDUCTING SCIENTIFIC, ENGINEERING, AND INDUSTRIAL RESEARCH

Treasury Department:

- Bureau of Public Health Service.
- Bureau of Engraving and Printing.
- Bureau of Industrial Alcohol.

War Department:

- Quartermaster General.
- Surgeon General.
- Engineer Corps.
- Ordnance Department (carries on research and development in small arms, artillery, ammunition, and explosives at various arsenals).
- Signal Corps (maintains laboratories at Monmouth, N. J., for research in radio, telephone, and telegraph, etc.).
- Air Corps (maintains extensive aircraft research and development laboratories at Wright Field, Dayton, Ohio).
- Chemical Warfare Service.

Department of Agriculture:

- Agricultural Experiment Stations maintained at numerous points throughout the country.
- Weather Bureau.
- Bureau of Animal Industry.
- Bureau of Dairy Industry.

Bureau of Plant Industry.
Forest Service.
Bureau of Chemistry and Soils.
Bureau of Entomology.
Bureau of Biological Survey.
Bureau of Agricultural Engineering.
Bureau of Public Roads.
Food, Drug, and Insecticide Administration.

Department of Commerce:

Bureau of Standards (a scientific center maintaining numerous extensive laboratories for research in various lines, such as electricity, weights and measures, metallurgy, optics, chemistry, heat and power, mechanics and sound, materials, etc.).
Bureau of Fisheries.
Coast and Geodetic Survey.
Bureau of Mines.

Navy Department:

Naval Observatory.
Hydrographic Office.
Bureau of Ordnance.
Bureau of Yards and Docks.
Bureau of Engineering—
Naval Research Laboratory, Bellevue, D. C. (includes radio research, submarine boat research, etc.).
Engineering Experiment Station, Annapolis, Maryland.
Fuel Oil Testing Plant, Philadelphia, Pa.
Electrical Laboratory at Brooklyn Navy Yard, etc.
Bureau of Construction and Repair.
Bureau of Aeronautics.
Bureau of Medicine and Surgery.

Department of Interior:
    Geological Survey.
    Reclamation Service.
Veterans' Administration (maintains research laboratories in connection with veterans' hospitals and diagnostic centers).
Federal Radio Commission.
National Advisory Committee on Aeronautics (maintains extensive research and experimental laboratory at Langley Field, Va.).
Government Printing Office.

APPENDIX B

Extracts from the Annual Report of the Director of the Bureau of Standards for the fiscal year ended June 30, 1930:

Page 2:

Hydraulic laboratory.—An advisory committee on the design, scope, and problems of the National Hydraulic Laboratory, consisting of representatives of the interested Government departments and a number of prominent hydraulic engineers, has been appointed. Tentative designs are now receiving consideration. It is expected that the laboratory will be finished by July, 1931.

The new laboratory will have three principal functions: (1) It will carry out fundamental investigations on all types of hydraulic phenomena to increase the accuracy of flow coefficients and to extend our knowledge of these phenomena; (2) it will conduct model studies of proposed hydraulic structures to determine the form which is most effective and least expensive to build and maintain; (3) it will conduct routine tests on all kinds of hydraulic instruments, meters, and accessories, and develop and improve such equipment.

* * * * *

Page 10:

Platinum metals.—A simple and accurate method was developed for the determination of osmium. It is now possible to determine each of the six metals of the platinum group

with satisfactory accuracy if they have been separated from each other. Completion of a system of methods of separation is the next phase of the research.

A method was developed for preparing spectographically pure iridium, but it is not satisfactory, either as to speed or yield, for the preparation of reasonably pure iridium in quantity. The very pure metal is needed for other phases of the work on the properties of the platinum metals.

* * * * *

Page 12:

Methods for silvering glass.—In connection with the preparation of a new circular on silvering glass, considerable work has been done in refining and improving the technique and simplifying the formulas in order to make success in their use more certain and less dependent upon previous experience. The new circular will give methods for the chemical deposition of silver, copper, platinum, and lead sulphide, and for the production of mirrors by cathode sputtering and by the condensation of metallic vapors on glass.

* * * * *

Page 13:

Construction of instruments and apparatus.—The bureau's shops constructed many special instruments for the laboratories, including high-grade blown-glass apparatus, and cabinet work such as cases for instruments, besides repairing furniture and woodwork required in the general upkeep of the buildings. Metal specimens for routine tests were machined, and the preparation of standard steel and alloy samples was carried on as before. Apparatus built in-

cluded the following: Seven resistance standards, air-cooled resistor for current balance, resilience meter, double automatic polishing machine, high-frequency oscillator, wool meter (including optical parts), cathode-ray oscillograph, revolving circuit breaker, flicker photometer, marginal relay, two reflectometers, beat-frequency oscillator, electrostatic voltmeter, hook gage, variable-voltage transformer, expansivity furnace, and an abrasion machine.

Other projects.—In addition to the work described in the foregoing paragraphs, some progress has been made on the following: Determination of the regularities in the arc spectrum of titanium and zirconium, Zeeman effects of spectral lines, the "Raman" effect, density changes and refractive index changes produced in glass by various heat treatments, filters for changing the color temperature of incandescent sources to mean sunlight, standards for index of refraction, aberrations of astronomical objectives, actino-electrical and photo-electrical properties of substances, infra-red absorption spectra of selected compounds, resonance radiation excited by higher series lines, thermal expansion of glass at high temperature, measurements of the difference in index of refraction in striae and the surrounding glass, problems of aerial mapping, thermal conductivity of metals, revision of tests of clinical thermometers, construction of special platinum resistance thermometers, correlation of data on thermal properties of methane, precise measurements of pressures from 1 to 100 atmospheres, measurement of diophantine quantities, preparation of equipment for liquefying helium, platinum

resistance thermometry at low temperatures, alloys of platinum metals for resistance thermometry at low temperatures, establishment of a practical laboratory scale of temperatures in the range below liquid-air temperatures, standardization of capillary tube viscometers, rotation viscometers, "bleeding" test for greases, reclamation of used oils, preparation of circulars of metallurgical information, particularly on zinc and cadmium.

* * * * *

Page 22:

RADIO RESEARCH ($85,700)

Primary frequency standard.—A primary frequency standard with an error of one part in several millions, consisting of four special piezooscillators of great accuracy, has been in operation for several months. Currents are furnished by this standard at 100,000, 10,000, 1,000, 100, and 10 cycles per second, and seconds impulses are given. These accurately known frequencies can be made available for measurement purposes in most of the bureau's buildings. The frequencies of the four piezooscillators are found to increase at the rate of about one part in a million per month.

Secondary frequency standards.—Some of the causes of erratic behavior of temperature-controlled piezooscillators constructed by the bureau have been eradicated by improvements in design. Two of the best piezooscillators maintain their frequencies from day to day within ± 1 part in a million. The frequencies of this group of piezooscillators have been found to increase about one or two parts in a million per month.

* * * * *

Page 26:

Production of optical glass.—Thirty-one pots embracing six different kinds of optical glass were made in attempts to improve melting procedures and to obtain consistently satisfactory quantities of good glass.

* * * * *

Page 29:

The structure of the sugars.—In the bureau's study of the molecular structure of sugar a number of new compounds and methods have been found, among which were (1) a method for separating methyl glycosides which yielded two crystalline methyl gulosides, and (2) a method for deacetylation by means of a small quantity of barium methylate which gave monoacetylglucosidomannose, a representative of a new type of sugar derivatives. The general problem of a possible relation between optical rotation and atomic dimension was attacked, and what is known as the fluorating process for sugars was studied. Four new crystalline compounds of levulose were prepared.

* * * * *

Page 37:

Additional projects.—Progress has also been made on the following investigations: Regularities in spectra, development of a stereoscopic thread gage, refractive changes produced by heat treatment of glass, recombination of ions and electrons, vapor pressure of carbon dioxide, specific volume of carbon dioxide, expansion and compressibility of crude oils saturated with methane, spontaneous generation of heat in materials, measurement of thermal conductivity of metals at high temperatures, specific heats of organic materials at low temperatures,

standard methods for testing brake linings, antifreezing liquids for automobile radiators, consistency of plastic materials, standardization of hardness of grease, fluidity of oils at low temperatures, load-carrying capacity of journal bearings, efficiency of gears, combustion of carbon monoxide, heat capacities of aqueous solutions, factors involved in silver plating, microscopy of organic compounds for identification purposes, development of thermal expansion apparatus, and precision screw cutting and ruling machine.

* * * * *

Page 47:

Air-navigation facilities—Radio.—In cooperation with the Aeronautics Branch, experimental work on the 2, 4, and 12 course visual-type radiobeacons was completed. The sensitivity of the vibrating-reed indicator was increased fourfold. The development of a new transmitter for the simultaneous transmission of radiotelephone messages and visual-type radiobeacon signals on the same radio-frequency was begun. An automatic volume-control device for use in the reception of visual beacon signals was developed, thereby relieving the pilot of the duty of controlling the receiving-set sensitivity.

A complete system of radio aids showing good promise for blind landing of aircraft was developed.

Contact and cooperation with the aircraft and radio industries in the development of engine ignition shielding was maintained. A commercial shielding asssembly patterned after an assembly developed by this bureau met with marked success. A direction finder permitting aural or visual indication of the

direction of the received signal was developed.

Lighting of airports and airways.—Photometric measurements have been made on 24-inch beacons, code beacons, and gaseous-discharge tube beacons, and observations of their visibility have been made from fixed stations and from airplanes. Observations on several types of boundary lights have been made from two distances by 16 observers. Experiments on the lighting of wind-indicator cones have been continued, and measurements are in progress on aviation red and green signal glasses, for the purpose of preparing specifications.

* * * * *

Page 48:

Aircraft-instrument developments.—A strut thermometer of the electric-resistance type, an improved suspended-head air-speed meter of the commutator-condenser type, and a maximum indicating accelerometer were constructed for the Bureau of Aeronautics, Navy Department. A mooring-force indicator for the airship Los Angeles and a suspended Pitot static-head air-speed meter are under development. Investigations to provide a basis for the specification of performance of banking indicators, magnetic compasses, and tachometers were conducted. A standard vibration board was designed and constructed for the purpose of testing aircraft instruments.

APPENDIX C

DEPARTMENT OF COMMERCE, BUREAU OF STANDARDS

Washington

Address reply to
Bureau of Standards
FSH : EGH

In your reply refer to
File No. H-0

AUGUST 16, 1932.

Mr. CHARLES B. RUGG,
Assistant Attorney General,
Department of Justice,
Washington, D. C.

Subject: Number of inventions made by Bureau staff

DEAR SIR: In reply to the telephoned inquiry of your office in relation to the number of inventions made by members of the scientific staff since the foundation of the Bureau of Standards in 1901, we have to state that definite figures are not available—the number can be estimated only in a most general way. This is for the reason that thousands of problems of research and investigation have been undertaken and concluded during that time. Doubtless in a large number of these cases inventions which were patentable were discovered. No special effort was made to determine whether or not this was the case since it was believed that the published papers constituted sufficient disclosure for the public to secure the full benefit of the work

of the Bureau, and thus in many cases no applications for patents were filed.

In cases where it was more clearly apparent that the results of work done in the Bureau constituted or involved patentable inventions and where it appeared that were patent protection not sought the public might be deprived of full benefit from the Bureau's discoveries through issue of patents to others, patent protection has been sought and secured. We think it safe to say that there are hundreds of cases of this sort. In many of these cases the inventors dedicated the inventions and patents resulting therefrom to the free use of the people of the United States, in accordance with the announced policy of the Bureau. This policy has recently been changed and such patents are now being assigned to the Government on the theory that since the ownership is properly in the Government the inventor has no interest which he can dedicate. In other cases where it was not clear whether the invention was made under such circumstances that it was to be considered to be the property of the employee or of the Government, employees have applied for and secured private patents.

Finally, we are of the opinion that as the result of some work done here patents have probably been applied for and granted to employees without the knowledge of the Bureau and without the question of ownership of the invention having been raised.

Respectfully,

(Sgd.) L. J. Briggs.

Lyman J. Briggs,

Acting Director.

AUG. 17, 1932.

Hon. CHARLES B. RUGG,
Assistant Attorney General.

DEAR MR. RUGG: Reference is made to the proposed attempt to bring the case of *United States* v. *Dubilier Condenser Corporation* to the Supreme Court for final review, and the informal request of Mr. Alexander Holtzoff, Special Assistant to the Attorney General, for general information concerning the activities of employees of the United States Department of Agriculture in inventive lines.

In response, you are informed that during approximately the last ten years four hundred applications for Letters Patent, in round numbers, have been filed by this Department in behalf of employees of the United States. Nearly all of these inventions, if patented, were regarded as belonging to the Government and were made available to the free use of the public.

It will be appreciated that the number given does not represent the total number of inventions occurring in this Department during that ten-year period, and I know of no way in which such total number could be definitely ascertained, since some probable inventions are merely incidental to the major objects sought and therefore not pressed, while others are published in current periodicals but patent proceedings are not instituted. However, after a hurried survey, it is safe to assume that the figure stated does not represent more than fifty per cent of probable inventions made in the Department by employees pursuant to their Government employ-

ment. In all probability that percentage should be lowered appreciably. This may further be explained by the fact that many officials and employees of the Department arrange for the filing of patent applications only in the more outstanding cases and in cases where such procedure is deemed advisable to protect the interest of the public or the future activities of the Department.

I hope that the information given will be of assistance to you and will be glad to supply any further available information in the premises if desired.

Very truly yours,

ELTON L. MARSHALL,
Solicitor.

U. S. GOVERNMENT PRINTING OFFICE: 1932